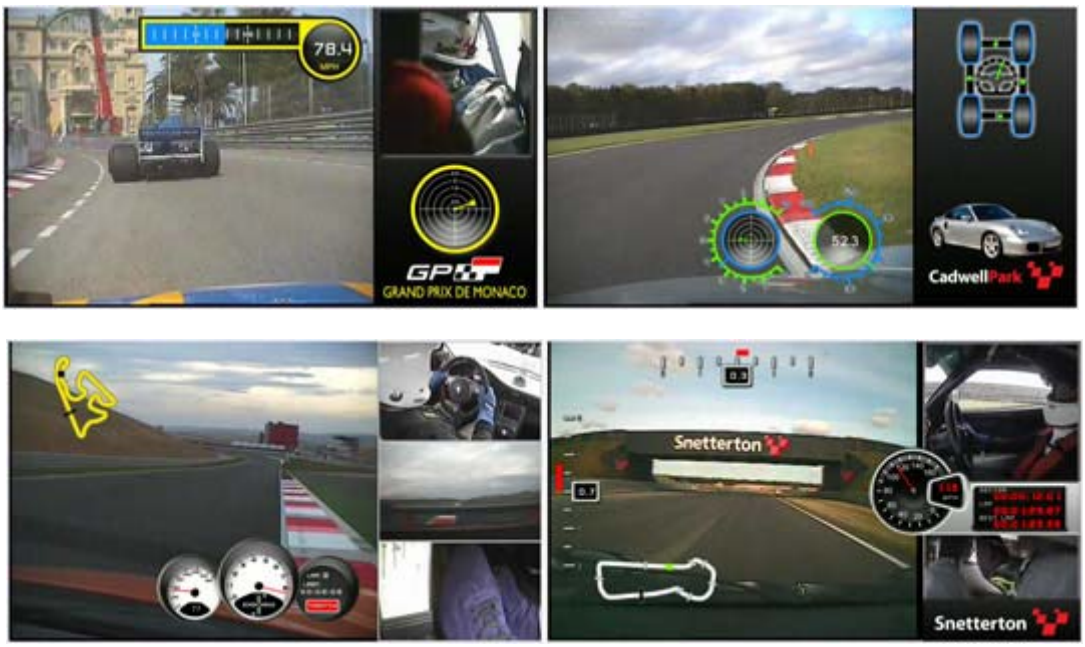
Race Technology
Automotive Technical Excellence

VIDEO4 Video & Data Logging System - Ultimate Visual Feedback

VIDEO4
Perfectly synchronised data and video
Overlay high resolution colour graphics
Record video from up to 4 cameras

The VIDEO4 units combine data and video, recording it perfectly synchronised to a single card for viewing, in-depth analysis and burning to DVDs.

- Load data and video into the analysis software - all perfectly synchronised ready to view immediately, with no manual synchronisation required.
- View video alongside your data in the analysis software - seeing more. See traffic situations, line choice, foot work etc, and see the results alongside in the data.
- Overlay data graphically onto the video - with dials, g forces, bar graphs, bitmaps, text, track maps etc.
- Multiple cameras (up to 4) combined in a single video. Crop, scale and mirror PIP videos - use the higher resolution widescreen area to position them.



Race Technology Ltd. VAT 715 9671 09
UK Tel +44 (0) 1773 537620 Fax +44 (0) 1773 537621
US Tel 804 358 7289 Fax 804 359 6694
Email: sales@race-technology.com

- Records DVD quality video, and CD quality stereo sound.
- Seamlessly integrate video into your data logging system, with the VIDEO4. Either combine it with your existing Race Technology system/DL1 or choose a single box system - the VIDEO4 + GPS enhancement.
- A range of enhancements are available to customise the system to your application, the most popular are shown here:

- 4 camera and widescreen options are available on all VIDEO4 units; further enhancements are specifically for the VIDEO with GPS enhancement. - Enhancements are available for the DL1 on combined systems
- Compatible with other Race Technology equipment; build a complete system with live data display/ECU interface (log data from your ECU).
- A full software package is supplied for set up, playback and analysis.
- A range of accessories are available to compliment your installation.

VIDEO4 Video and data logging system

Video format and quality

The VIDEO4 records both video and audio data to the same standard as a DVD. It is in the same format as most digital TV broadcasts. In technical terms this means that:

- The video is stored at D1 (DVD) resolution using a very high quality MPEG2 encoder (see the FAQ section on different encoding methods).
- The audio is encoded as stereo (16 bit / 48k) and encoded with MP2. It is therefore comparable with CD quality.
- The video and audio are combined into a standard MPG file that can be played by most PC based players. They can also be copied onto a DVD that most hardware players will allow you to view.

The Analysis software is also equipped with a video export function, which allows for conversion to a range or alternative video formats. The video export also adds a post processing overlay option (should you prefer to use it), meaning you don't have to overlay your data when the video is recorded. Just another of the options that makes the VIDEO4 adaptable to your needs. For more information on the video export feature visit our knowledge base by clicking the image below:

Data/Video synchronisation

One of the key advantages of the VIDEO4 is its ability to store perfectly synchronised video and data. To do this, the VIDEO4 takes the data from any of our data-logging products - via it's built in data port - and stores it along side the video. As the VIDEO4 receives the data, it decodes it and adds in details of the frame of video that is currently being stored. When the data is subsequently decoded, the software knows exactly which frame of data should be displayed.

Video Overlay

The video overlay is of the highest quality. It is fully configurable to the user's exact requirements.

The following, graphic display methods may be user defined and added to the screen in a number of different combinations:

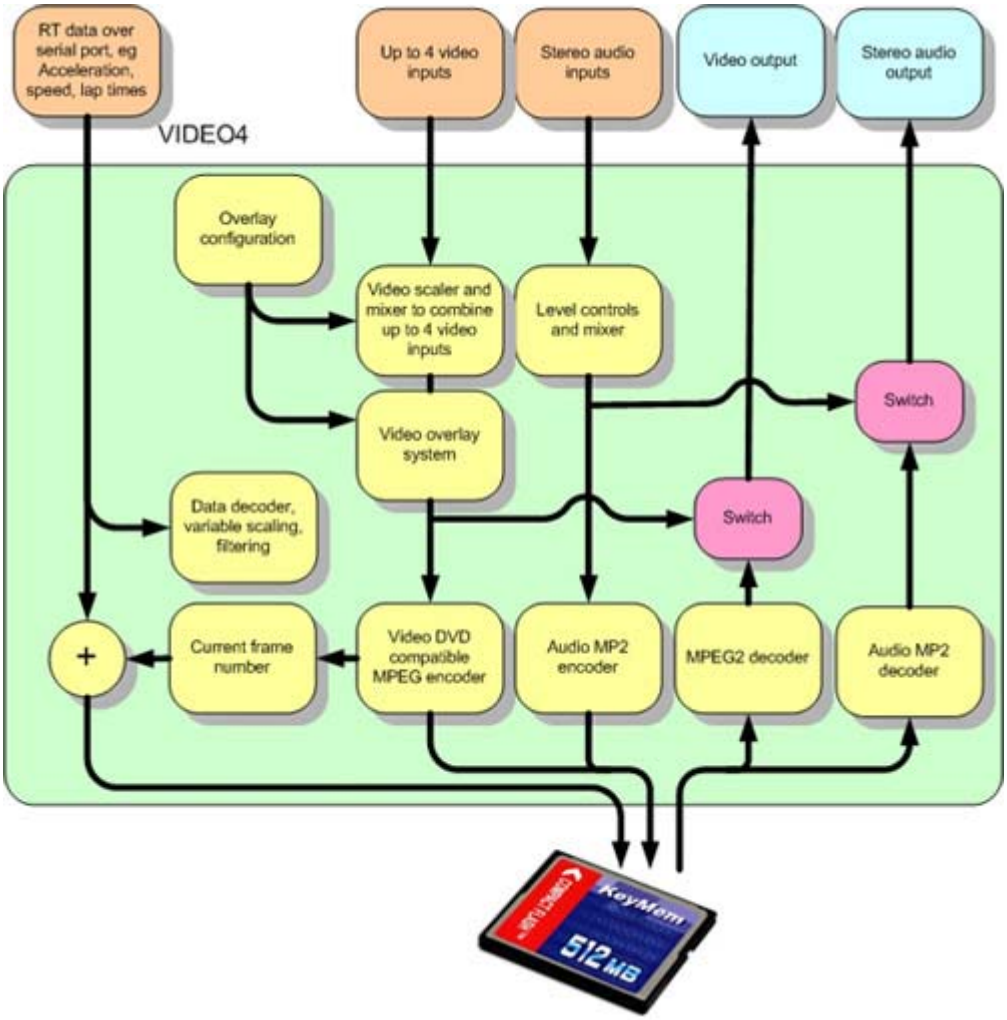
- Scaled video picture in pictures from up to three channels
- Simple fixed text
- Bitmaps
- Numerical values from the data (for example speed, temperatures, lap times)
- Dials (e.g. an RPM display)
- Bar-graphs

All the overlaid graphics are:

- 24 bit colour (with a maximum of sixteen million colours)
- Alpha blended, so that all graphics may be made translucent if required
- Anti-aliased, so that the graphics look smooth and professional
- Added at full D1/DVD resolution, so that they are as clear as possible

A PC program is provided with the unit. It will enable you to design the layout of the screen overlays to meet your needs. Once this has been done, the layout is simply uploaded to the VIDEO4. If no overlay is required for a particular application then it can, of course, be left blank.

VIDEO4 internals



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Construction	Custom designed injection molded black ABS
Video inputs (electrical)	Standard composite video 1v p-p, Either PAL or NTSC
Video encoding standard	MPEG2, constant bit rate. Frame format, GOP length of 15, IP and B frames
Audio inputs (electrical)	Microphone level with AGC and standard line level inputs 0.7v p-p
Audio encoding standard	MP2 layer 2
Memory	Removable compact flash card, formatted as FAT32. Most high speed types are compatible. All memory cards supplied by Race Technology have been tested on the highest quality setting 12Mbit/s.
Status indicators	LEDs on the front panel to indicate, power supply okay, incoming serial data available, currently recording video and GPS status.
Processor	900MHz, 64bit DSP, 128M DDR2 RAM
Data port	RS232 levels, upto 5 Mbit - compatible with all current Race Technology hardware
Power supply requirements	9v to 15v nominal input. Power consumption approximately 12W
Dimensions	149 x 139 x 35 mm

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VIDEO4 Video and data logging system

A VIDEO4 unit (standard packing list), when not bought as part of a package, includes:

- VIDEO4 unit
- Power cable (2m)
- Null modem cable (2m)
- VIDEO4 user manual
- Comprehensive software CD
- Mounting brackets
- Video output lead for setting up
- Carrying case (with cut foam interior)

A VIDEO4 sport 2 camera system, in addition to the VIDEO4 standard parts, includes:

- 4GB Compact Flash (CF) card
- High speed CF reader
- 1 x high resolution bullet camera (6mm, 53° lens)
- 1 x standard resolution bullet camera (3.6mm, 90° lens)
- 1 x microphone

A VIDEO4 sport 4 camera system, in addition to the VIDEO4 standard parts, includes:

- 4GB Compact Flash (CF) card
- High speed CF reader
- 1 x high resolution bullet camera (6mm, 53° lens)
- 3 x standard resolution bullet cameras (3.6mm, 90° lens)
- 1 x microphone

VIDEO4 unit with built in GPS:

- 1 x VIDEO4
- 1 x power cable (2m)
- 1 x VIDEO4 user manual
- 1 x Software on CD
- 1 x Pair mounting brackets

- 1 x Video output lead for setting up
- 1 x Carry case
- 1 x 4GB Compact Flash card
- 1 x USB Compact Flash card reader
- 1 x GPS antenna with 3m lead
- 1 x high resolution bullet camera
- 1 x standard resolution bullet camera (2 channel system)
- 3 x standard resolution bullet camera (4 channel system)

Optional Extras:

- Camera Mounting Block
- 3.5" LCD Monitor for set-up
- VIDEO4 Mounting Brackets
- Serial Y-adapter when used with other Race Technology products
- A selection of wide and narrow angle lenses
- Audio in Cable for 3rd party microphones
- Audio out Cable
- Video in Cable for 3rd party cameras
- Video out Cable

It's then simply a matter of setting up any required graphical overlays, and connecting it to your Race Technology data logger, cameras and microphone. You are then ready to produce high quality synchronised performance data and video.

Some system configurations may require the use of a Y-adapter cable to split the data signal between the VIDEO4 and other Race Technology equipment.

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VIDEO4 Enhancement Options

4 Camera Licence

Standard units are 2 channel, see every angle with a 4 camera system. See more with additional PIP cameras: Main track view, rear view, sideview, driver, pedals, suspension movement...

16:9 Widescreen

Free with a 4 camera licence is the widescreen capability, with 50% higher resolution. See greater quality video on widescreen TVs, and use the extra screen area to layout PIP videos and overlays.

5Hz GPS + 2g Accelerometers

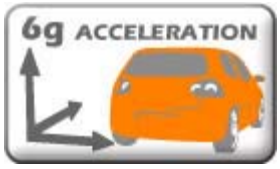
If you don't already own one of our data loggers, it may be preferable to incorporate one into the VIDEO4 unit. Add standard 5Hz GPS data for accurate speed/position data and track maps. 2g accelerometers for analysing your braking and cornering forces. **This option also includes the "Analogue and RPM Inputs" enhancement,** see below:

Analogue and RPM Inputs

Add 4 analogue inputs and the all important RPM input to the unit.**This option is now standard on 5Hz GPS + 2g enabled units!**This system fulfils most people's needs, negating the need for an additional data logger in the system.

20Hz Advanced GPS Option

An upgrade over the 5Hz GPS + 2g accelerometers option. Increased speed and position accuracy, with higher GPS resolution. Download corrections from the internet with advanced PPP mode.



6g Accelerometers

An upgrade over the 5Hz + 2g accelerometers option. 6g accelerometers are recommended for applications that use large aerodynamic aids.

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Battery Backup

Having a built in battery allows the system to close the recording successfully, and continue to log data, even with unexpected power outages from the vehicle.

Main product is VIDEO4 with built in 5Hz GPS and 2g Accelerometers, 2 camera package. Including 1 x High res camera, 1 x standard res camera, built in microphone, powercable, video out cable, serial cable, softwareCD, 4GB CF card, CF card reader, carry case and instruction manual.